



## **DEPARTMENT OF THE INTERIOR**

### **Fish and Wildlife Service**

#### **50 CFR Part 17**

**[Docket No. FWS-R9-ES-2011-0003]**

**[FXES111309F2130D2-123-FF09E22000]**

### **Endangered and Threatened Wildlife and Plants; Reclassifying the Straight-Horned Markhor with Special Rule**

**RIN 1018-AY42**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule and 12-month finding.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to reclassify the straight-horned markhor (*Capra falconeri jerdoni*) from endangered to threatened under the Endangered Species Act of 1973, as amended. This proposed action is based on a

review of the best available scientific and commercial data which indicates that the endangered designation no longer correctly reflects the status of the straight-horned markhor. This proposal constitutes our 12-month finding on the petition to reclassify this subspecies, serves as our 5-year review, and fulfills our obligations under a settlement agreement. We are also proposing a special rule concurrently. The effects of these regulations are to correctly reflect the status of the subspecies and encourage conservation of additional populations of the straight-horned markhor.

**DATES:** We will consider comments and information received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may submit information by one of the following methods:

(1) Electronically: Go to the Federal eRulemaking Portal:

<http://www.regulations.gov>. Search for FWS-R9-ES-2011-0003, which is the docket number for this rulemaking. On the search results page, under the Comment Period heading in the menu on the left side of your screen, check the box next to "Open" to locate this document. Please ensure you have found the correct document before submitting your comments. If your comments will fit in the provided comment box, please use this feature of <http://www.regulations.gov>, as it is most compatible with our comment review procedures. If you attach your comments as a separate document, our

preferred file format is Microsoft Word. If you attach multiple comments (such as form letters), our preferred format is a spreadsheet in Microsoft Excel.

(2) By hard copy: Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS-R9-ES-2011-0003; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042-PDM; Arlington, VA 22203.

We will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see **Information Requested** under **SUPPLEMENTARY INFORMATION** for more information).

**FOR FURTHER INFORMATION CONTACT:** Janine Van Norman, Chief, Branch of Foreign Species, Endangered Species Program, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, Room 420, Arlington, VA 22203; telephone 703-358-2171; facsimile 703-358-1735. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

## **SUPPLEMENTARY INFORMATION:**

### **Executive Summary**

#### **I. Purpose of the Regulatory Action**

We are proposing to reclassify the straight-horned markhor from endangered to threatened under the Endangered Species Act of 1973, as amended (Act) due to recovery

actions in the Torgar Hills of Pakistan. Conservation actions involving implementation of a trophy hunting conservation plan in 1985 have eliminated impacts from poaching in this population. Since 1985, the population has been steadily increasing and is considered the stronghold of the subspecies. In light of this substantial population growth in the Torgar Hills, we have determined that the subspecies no longer meets the definition of an “endangered species” under the Act; therefore, we find that reclassifying the subspecies in its entirety from endangered to threatened is warranted. Thus, in this action, we are issuing a proposed rule to reclassify the subspecies (*C. f. jerdoni*) as threatened under the Act.

We are also proposing a special rule that would allow for the import of sport-hunted straight-horned markhor trophies under certain conditions. This regulation would support and encourage conservation actions of the straight-horned markhor.

## **II. Major Provision of the Regulatory Action**

If adopted as proposed, this action would reclassify the straight-horned markhor from endangered to threatened in the List of Endangered and Threatened Wildlife at 50 CFR 17.11(h), and would allow the import of sport-hunted straight-horned markhor trophies under certain conditions at 50 CFR 17.40. This action is authorized by the Act.

## **Background**

Section 4(b)(3)(B) of the Endangered Species Act (Act) (16 U.S.C. 1531 *et seq.*) requires that, for any petition to revise the Federal Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that listing the species may be warranted, we make a finding within 12 months of the date of receipt of the petition (“12-month finding”). In this finding, we determine whether the petitioned action is: (a) Not warranted, (b) warranted, or (c) warranted, but immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12-month findings in the **Federal Register**.

In this document, we announce that reclassifying the straight-horned markhor as threatened is warranted, and we propose to reclassify this subspecies as threatened in the Federal List of Endangered and Threatened Wildlife. Additionally, we are proposing a special rule under section 4(d) of the Act that, if adopted as proposed, would allow the import of straight-horned markhor trophies from conservation programs that meet certain criteria.

Prior to issuing a final rule on this proposed action, we will take into consideration all comments and any additional information we receive. Such information may lead to a final rule that differs from this proposal. All comments and recommendations, including names and addresses of commenters, will become part of the administrative record.

#### *Petition History*

On August 18, 2010, we received a petition dated August 17, 2010, from Conservation Force, on behalf Dallas Safari Club, Houston Safari Club, African Safari Club of Florida, The Conklin Foundation, Grand Slam Club/Ovis, Wild Sheep Foundation, Jerry Brenner, Steve Hornaday, Alan Sackman, and Barbara Lee Sackman, requesting the Service downlist the Torghar Hills population of the Suleiman markhor (*Capra falconeri jerdoni* or *C.f. megaceros*), in the Balochistan Province of Pakistan, from endangered to threatened under the Act. The petition clearly identified itself as such and included the requisite identification information for the petitioners, as required by 50 CFR 424.14(a). In a September 15, 2010, letter to Conservation Force, we acknowledged receipt of the petition.

#### *Previous Federal Actions*

On June 14, 1976, we published in the **Federal Register** a rule listing the straight-horned markhor, or the Suleiman markhor (*Capra falconeri jerdoni*), and the Kabul

markhor (*C. f. megaceros*), as well as 157 other U.S. and foreign vertebrates and invertebrates, as endangered under the Act (41 FR 24062). All species were found to have declining numbers due to the present or threatened destruction, modification, or curtailment of their habitats or ranges; overutilization for commercial, sporting, scientific, or educational purposes; the inadequacy of existing regulatory mechanisms; or some combination of the three. However, the main concerns were the high commercial importance and the inadequacy of existing regulatory mechanisms to control international trade.

Later, the Suleiman markhor and the Kabul markhor were considered by some authorities to be the single subspecies *C. f. megaceros* (straight-horned markhor). These subspecies currently remain listed as separate entities under the Act.

On March 4, 1999, we received a petition from Sardar Naseer A. Tareen, on behalf of the Society for Torghar Environmental Protection and the International Union for Conservation of Nature (IUCN) Central Asia Sustainable Use Specialist Group, requesting that the Suleiman markhor (*Capra falconeri jerdoni* or *C. f. megaceros*) population of the Torghar Hills region of the Balochistan Province, Pakistan, be reclassified from endangered to threatened under the Act. On September 23, 1999 (64 FR 51499), we published in the **Federal Register** a finding, in accordance with section 4(b)(3)(A) of the Act, that the petition had presented substantial information indicating that the requested reclassification may be warranted, and we initiated a status review. We opened a comment period, which closed January 21, 2000, to allow all interested parties

to submit comments and information. A 12-month finding was never completed.

On June 2, 2011, we published in the **Federal Register** a finding that the petition received on August 18, 2010, from Conservation Force (discussed above under “*Petition History*”), had presented substantial information indicating that the requested reclassification may be warranted, and we initiated a status review (76 FR 31903). We opened a comment period, which closed August 1, 2011.

On February 1, 2012, Conservation Force, Dallas Safari Club, and other organizations and individuals filed suit against the Service for failure to conduct a 5-year status review pursuant to section 4(c)(2)(A) under the Act (*Conservation Force, et al. v. Salazar*, Case No. 11 CV 02008 D. D. C.). On March 30, 2012, a settlement agreement was approved by the Court (11-CV-02008, D. D. C.), in which the Service agreed to submit to the **Federal Register** by July 31, 2012, a 12-month finding on the August 2010 petition. This 12-month finding also constitutes our 5-year review of the straight-horned markhor.

## **5-Year Review**

Section 4(c)(2)(A) of the Act requires that we conduct a review of listed species at least once every 5 years. A 5-year review is a periodic process conducted to ensure that the classification of a listed species is appropriate. Section 4(c)(2)(B) requires that we determine: (1) Whether a species no longer meets the definition of endangered or



threatened and should be removed from the List (delisted); (2) whether a species more properly meets the definition of threatened and should be reclassified from endangered to threatened; or (3) whether a species more properly meets the definition of endangered and should be reclassified from threatened to endangered. Our determination is based on the best scientific and commercial data available at the time of the review. This 12-month finding serves as our 5-year review of this species.

### **Information Requested**

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available. Therefore, we request comments or information from other concerned governmental agencies, the scientific community, or any other interested parties concerning this proposed rule. We particularly seek clarifying information concerning:

(1) Taxonomy. Specifically, we are interested in information relating to the correct classification of the *Capra falconeri* subspecies.

(2) Distribution, habitat selection, diet, and population abundance and trends of this subspecies.

(3) The effects of habitat loss and changing land uses on the distribution and abundance of this subspecies.

(4) The factors that are the basis for making a listing/delisting/downlisting determination for a species under section 4(a) of the Act, which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

(5) Information on management programs for straight-horned markhor conservation, including mitigation measures related to conservation programs, and any other private, nongovernmental, or governmental conservation programs that benefit this species.

(6) Information on whether changing climatic conditions are affecting the subspecies or its habitat.

Please include sufficient information with your submission (such as full references) to allow us to verify any scientific or commercial information you include. Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made “solely on the basis of the best scientific and commercial data available.”

## **Public Hearing**

At this time, we do not have a public hearing scheduled for this proposed rule. The main purpose of most public hearings is to obtain public testimony or comment. In most cases, it is sufficient to submit comments through the Federal eRulemaking Portal, described above in the **ADDRESSES** section. If you would like to request a public hearing for this proposed rule, you must submit your request, in writing, to the person listed in the **FOR FURTHER INFORMATION CONTACT** section by Insert date 45 days after date of publication in the Federal Register].

### **Species Information and Factors Affecting the Species**

Section 4 of the Act (16 U.S.C. 1533) and implementing regulations (50 CFR part 424) set forth procedures for adding species to, removing species from, or reclassifying species on the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, a species may be determined to be endangered or threatened based on any of the following five factors:

- A. The present or threatened destruction, modification, or curtailment of its habitat or range;
- B. Overutilization for commercial, recreational, scientific, or educational purposes;
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; or
- E. Other natural or manmade factors affecting its continued existence.

In considering whether a species may warrant listing under any of the five factors, we look beyond the species' exposure to a potential threat or aggregation of threats under any of the factors, and evaluate whether the species responds to those potential threats in a way that causes actual impact to the species. The identification of threats that might impact a species negatively may not be sufficient to compel a finding that the species warrants listing. The information must include evidence indicating that the threats are operative and, either singly or in aggregation, affects the status of the species. Threats are significant if they drive, or contribute to, the risk of extinction of the species, such that the species warrants listing as endangered or threatened, as those terms are defined in the Act.

The focus of this status review is the straight-horned markhor (*Capra falconeri jerdoni*). For most of the populations, there is no detailed information on distribution, population estimates, or threats to the subspecies; information that is available is over 30 years old. However, the Torghar Hills population of the straight-horned markhor has been extensively studied since the mid-1980s due to the implementation of a conservation plan in this area. Therefore, this status review mainly consists of information related to this population. When possible, we have included general information on the status of the populations outside of the Torghar Hills. For these particular populations, which we lack information, we request additional information from the public during this proposed rule's comment period (see **Information Requested**, above).

#### *Taxonomy*

The markhor (*Capra falconeri*) is a species of wild goat belonging to the Family Bovidae and Subfamily Caprinae (sheep and goats) (Valdez 2008, unpaginated). When the markhor was first listed under the Act in 1975, seven subspecies of markhor were generally recognized: *Capra falconeri jerdoni* (straight-horned or Suleiman markhor), *C. f. megaceros* (Kabul markhor), *C. f. cashmirensis* (Kashmir markhor), *C. f. falconeri* (Aston markhor), *C. f. ognevi* (Uzbek markhor), *C. f. heptneri* (Tajik markhor), and *C. f. chialtanensis* (Chiltan markhor) (64 FR 51499, September 23, 1999; Roberts 1977, p. 196). In 1975, Schaller and Khan (1975, pp. 188, 191) recognized 3 subspecies of markhor based on horn shape and body characteristics: *C. f. jerdoni* and *C. f. megaceros* were combined into *C. f. megaceros* (straight-horned markhor); *C. f. cashmirensis* and *C. f. falconeri* were combined into *C. f. falconeri* (flare-horned markhor); and *C. f. ognevi* and *C. f. heptneri* were combined into *C. f. heptneri* (Heptner's markhor). Many authorities consider *C. f. chialtanensis* to be *Capra aegagrus chialtanensis* (Chiltan wild goat) (64 FR 51500, September 23, 1999).

In our June 2, 2011, 90-day petition finding, we requested information on the taxonomy of *C. f. jerdoni* and *C. f. megaceros* to determine if these constitute a single subspecies. We did not receive any information regarding the correct nomenclature that should be followed. During our status review, we did not find consistency in the use of *C. f. jerdoni* or *C. f. megaceros*. We found that papers published around the same time as each other often used both classifications to describe subspecies of markhor. Therefore, until it is clear, we will continue to recognize the distinct subspecies of *C. f. jerdoni* and *C. f. megaceros*, as they are currently listed under the Act, with the straight-horned

markhor (*C. f. jerdoni*) being the focus of our status review. We are again requesting from the public additional information on the taxonomy of *Capra falconeri* to determine the proper nomenclature that should be followed (see **Information Requested** for details).

### *Species Description*

Markhor are sturdy animals with strong, relatively short, thick legs and broad hooves. They are a reddish-grey color, with more buff tones in the summer and grey in the winter. The legs and belly are a cream color with a conspicuous dark brown pattern on the forepart of the shank interrupted by a white carpal patch. They also have a dark brown mid-dorsal stripe that extends from the shoulders to the base of the tail. The tail is short, is sparsely covered with long black hairs, but is naked underneath. Adult males have an extensive black beard followed by a shaggy mane of long hairs extending down the chest and from the fore part of the neck. There is also a crest of long black and dark brown hairs that hang like a mane down either side of the spine from the shoulders to the croup (Roberts 1977, p. 197). Horns are straight with an open, tight spiral resembling a corkscrew (Schaller and Khan 1975, p. 189).

### *Distribution*

Historically, the straight-horned markhor inhabited the mountains of Pakistan and Afghanistan, just inside the Afghanistan border. Today, the straight-horned markhor is only found in the mountains of Balochistan Province, Pakistan; no markhor occur in Afghanistan. Although it is considered widely distributed, the straight-horned markhor

has been reduced to small, scattered populations on all the mountain ranges immediately to the north and east of Quetta, including Murdar, Takhatu, Zarghun, Kaliphat, Phil Garh, and Suleiman. It is reported that the straight-horned markhor still survives in the Shingar Range on the border of Balochistan and South Waziristan. The greatest concentration is in the Torghar Hills of the Toba Kakar Range on the border with Afghanistan, within a community-based management program, the Torghar Conservation Project. This project area covers approximately 1,000 km<sup>2</sup> (386 mi<sup>2</sup>) within the Torghar Hills (Frisina and Tareen 2009, pp. 142–143; Johnson 1994b, p. 16; Roberts 1977, p. 198; Schaller and Khan 1975, p. 196).

Limited information is available for populations throughout most of the straight-horned markhor's range. Many historical populations were extirpated due to over-hunting (Johnson 1994b, p. 5; Johnson 1994, p. 10). Schaller and Khan (1975, p. 196) estimated 150 in Takhatu, 20 to 30 in Kalifat, 20 in Zarghum, and 20 in Shinghar. Few were estimated to survive in the Murdar Range, and a remnant population may have existed near Lorelei in the Gadabar Range. Roberts (1969 in Valdez, 2008, unpaginated) believed the number of markhor in the Toba Kakar range was fewer than 500. In 1984, Tareen estimated fewer than 200 remained in the Torghar Hills (Mitchell, 1989, p. 9). Overall, Schaller and Khan (1975, p. 196) estimated as few as 1,000 straight-horned markhor survived throughout the subspecies' range.

In general, markhor populations are reported as declining (Valdez 2008, unpaginated). Hess *et al.* (1997, p. 255), based on the general status of wildlife in

Pakistan, concluded that the straight-horned markhor had likely not increased in recent years. Current estimates for populations of straight-horned markhor are lacking, with the exception of the population in the Torghar Hills of the Toba Kakar Range. This population has been extensively studied due to the implementation of a community-based management program. In addition, as part of the use of annual export quotas for markhor sport-hunted trophies granted to Pakistan at the 10th meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Pakistan submits annual surveys of markhor populations, including populations within the Torghar Conservation Area (Resolution Conf. 10.15 (Rev. CoP 14); See discussion below under *Overutilization for commercial, recreational, scientific, or educational purposes*). Based on surveys conducted from 1985–1988, Mitchell (1989, p. 9) estimated 450 to 600 markhor inhabited the Torghar Hills. Regular surveys of the managed area have taken place since 1994, when Johnson (1994b, p. 12) estimated the population of markhor to be 695. Later surveys estimated the population to be 1,296 in 1997; 1,684 in 1999; 2,541 in 2005; and 3,158 in 2008 (Arshad and Khan 2009, p. 9; Shafique 2006, p. 6; Frisina 2000, p. 8; Frisina *et al.* 1998, p. 6). Although most of the mountain ranges in Balochistan have not been formally surveyed, Johnson (1994b, p. 16) concluded that Torghar was one of the last remaining strongholds for the subspecies.

### *Habitat*

Straight-horned markhor are associated with extremely rugged terrain with precipitous cliffs, rocky caves, and bare rock surfaces interspersed with patches of arid, steppe vegetation. They can be found from 600 meters (m) (1,969 feet (ft)) up to 3,300 m



(10,827 ft) in elevation (Woodford *et al.* 2004, p. 181; Mitchell 1989, p. 8; Johnson 1994b, p. 5).

The Torghar Hills, a chain of rugged sandstone ridges located within the Toba Kakar Range, lies in the Balochistan juniper and pistachio scrub forest and dry subtropical semi-evergreen forest (Woodford *et al.* 2004, pp. 178–179; Frisina 2000, p. 3). The higher elevations (2,000–3,300 m; 6,562–9,843 ft) have some Chilgoza pine (*Pinus gerardiana*) and juniper (*Juniperus macropoda* or *excelsa*). Rugged upland slopes have not experienced as much grazing pressure and still have bunchgrasses, forbs, wild almond trees (*Amygdalus brahnica*), *Ephedra* sp., *Artemisia* sp., and other shrubs, while lower slopes (1,000–2,000 m; 3,281–6,562 ft) have been denuded of trees. Widely scattered olive (*Olea cuspidate*), wild pistachio (*Pistacia khinjuk*), juniper, and ash (*Fraxinus xanthoxyloides*) are all that remain on the lower slope. Tamarisk (*Tamarix* sp.) and *Cargana* sp. occur along stream beds and drainage lines where water is available. Overgrazing has resulted in xerophytic scrub vegetation consisting of *Acacia*, *Artemisia*, *Haloxylon*, and *Rosa* (Woodford *et al.* 2004, p. 179; Ahmed *et al.* 2001, p. 3; Johnson 1994b, p. 3; Tareen 1990, p. 2; Mitchell 1989, p. 5).

The climate in Torghar varies considerably in temperature and precipitation by season. Summers are hot, with a mean temperature of 26 °C (79 °F), but temperatures often rise to 50 °C (122 °F). Winters are cold, with a mean temperature of 4 °C (39.2 °F), but temperatures sometimes fall to -15 °C (5 °F). Day and night temperatures also vary considerably. Annual precipitation is around 200 to 250 millimeters (mm) (7.9 to

9.8 inches (in)), which mainly falls in March and April. In winter, most precipitation occurs as snow. Violent thunderstorms and dust storms occur in summer, with rain occurring in July and August (Arshad and Khan 2009, p. 2; Woodford *et al.* 2004, p. 179; Ahmed *et al.* 2001, p. 2; Frisina *et al.* 1998, p. 3; Mitchell 1989, p. 4). Periodic droughts are common and may last for several years at a time (Frisina and Tareen 2009, p. 143).

### *Life History*

Markhor are diurnal in feeding activity. They are most active in the early morning and late evening (Mitchell 1989, p. 8). Wild pistachios are a preferred food for straight-horned markhor (Johnson 1994, p. 12; Roberts 1977, p. 198), although in general they are known to feed on grasses and leaves, and twigs of bushes. Markhor seek water in the late afternoon; however, they may need to descend to valley bottoms for water, but only after darkness (Roberts 1977, p. 198). Markhor in the Torghar Hills are mostly sedentary, although extensive local movements may occur due to deteriorating grazing conditions or disturbance (Woodford *et al.* 2004, p. 181).

Markhor are gregarious, with females, their young, and immature males associating in small herds, but competition with domestic goat flocks may drive markhor populations to higher terrain and result in larger herds. Adult males live solitary lives, taking shelter under rock overhangs or natural caves. They only join the females and young during the rut, which for the straight-horned markhor peaks around mid-November and lasts about 2 weeks. Males may attach themselves to one particular territory or herd. Fighting between rival males also occurs during this time. Markhor reach sexual

maturity around 3 years of age. Gestation lasts from 162 to 170 days. Females usually give birth to one young, but twins are not uncommon. For the first few days, the newborn will remain in a sheltered hollow. Mothers have been observed making a special characteristic call when approaching their young. A young markhor will remain with its mother until the rutting season or until the next young is born. After this, the female will drive the older young away if it approaches too closely. In the wild, it is possible that markhor can live up to 18 years of age, but perhaps few males live beyond 11 or 12 years (Ali 2008, p. 16; Mitchell 1989, p. 9; Roberts 1977, pp. 198–199).

### *Conservation Status*

The markhor (*Capra falconeri*) is currently classified as “endangered” by the International Union for Conservation of Nature (IUCN) due to a low number of mature individuals (estimated at fewer than 2,500), a continuing rate of decline, and severely fragmented subpopulations all with fewer than 250 individuals (Valdez 2008, unpaginated). However, we note that this IUCN assessment is at the species level and appears to consider the combined status of 3 subspecies, as recognized by Schaller and Khan in 1975. Furthermore, given the basis of the “endangered” classification stated above, it appears that the status of the Torghar Hills population is not considered. Although the increasing population estimates of Torghar Hills are briefly referenced, the assessment does not appear to recognize the biological significance of these individuals in this portion of the range in relation to the subspecies. In a subspecies discussion on the population of straight-horned markhor (*C. f. megaceros*), the population status is listed as declining. Thus, it appears that the increasing Torghar Hills population is masked by the

assumed decline of the remaining populations of the whole subspecies.

The straight-horned markhor is also listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Species included in CITES' Appendix I are considered threatened with extinction which are or may be affected by trade, and international trade is permitted only under exceptional circumstances. Commercial trade in Appendix I specimens is generally precluded (see Factor D discussion, below). The straight-horned markhor is also listed on the Third Schedule of the 1974 Balochistan Wildlife Protection Act (Frisina and Tareen 2009, p. 145; Ahmed *et al.* 2001, p.5). The Third Schedule of this law is a list of protected animals that cannot be hunted, killed, or captured (BWPA 1977, p. 15).

*A. Present or threatened destruction, modification, or curtailment of habitat or range.*

Across the range of the straight-horned markhor, populations have declined partly due to habitat modification, and habitat continues to be threatened due to drought and overgrazing of domestic livestock, deforestation from logging (which has occurred over hundreds of years), and collection of wood for building materials, fuel, charcoal, and food (WWF 2011, unpaginated; Valdez 2008, unpaginated; WWF 2008, unpaginated; Hess *et al.* 1997, p. 255; CITES 1997, p. 895).

Much of the land where straight-horned markhor occur is owned by local tribes whose subsistence is largely dependent on keeping large herds of primarily sheep and

goats. Rangelands often support livestock beyond their carrying capacity, leading to overgrazing, a halt to natural regeneration, and subsequent desertification of native vegetation. Overgrazing by domestic livestock is known to have resulted in the decline of wild ungulates and pushed their occurrence to range edges (WWF 2011, unpaginated; Frisina and Tareen 2009, pp. 145, 154; Valdez 2008, unpaginated; WWF 2008, unpaginated; Woodford *et al.* 2004, p. 180; Tareen 1990, p. 4; Mitchell 1989, pp. 4–5; Schaller and Khan 1975, p. 197).

On the tribal lands of the Torghar Hills, livestock grazing is a dominant land use. Lower slopes and valleys have been denuded of trees and continue to be degraded by the collection of fuel wood and heavy grazing (Ahmed *et al.* 2001, pp. 3, 8; Frisina *et al.* 1998, pp. 9–10). The demand on wood and forage resources along valley bottoms and lower slopes increases during a bi-annual migration of local and nearby tribes and their herds through the Torghar Hills (Woodford *et al.* 2004, p. 180; Ahmed *et al.* 2001, p. 4). Although markhor concentrate in the upland slopes, the lower slopes are utilized as foraging ground and may be important in supporting an increasing population of markhor.

The steeper, upland slopes and higher elevation areas of the Torghar Hills are key areas for this population of markhor. These areas are not easily accessible, and because they are so steep and rocky, there is little human settlement or grazing pressure. As a result, there is good quality habitat for markhor spread over large upland areas (Ahmed *et al.* 2001, pp. 3, 8; Frisina *et al.* 1998, p 10). However, grazing pressure may increase in

these upland areas due to a combination of drought conditions and the tradition of keeping large herds of domestic livestock. Drought is more the norm than the exception in the Torghar Hills (Frisina *et al.* 2002, p. 15). As forage becomes limited in lower slopes and valleys, due to drought conditions and/or significant grazing pressure, domestic herds may move to higher elevations in search of forage (Frisina *et al.* 2002, p. 13).

In the Torghar Hills, locals have implemented a wildlife management plan, the Torghar Conservation Project (TCP), and created financial incentives for community-based conservation to combat years of drought, habitat loss, and substantial losses in their livestock herds. Specifically, the Torghar Hills tribal council recognized that protecting markhor and its habitat can generate greater income for the community, rather than relying solely on traditional livestock production.

The TCP began in 1985, and originally focused on the development of a game guard system to protect the markhor from poaching (see Factor B discussion, below) (Frisina and Tareen 2009, pp. 141–142; Woodford *et al.* 2004, p. 178; Frisina 2000, p. 1; Frisina *et al.* 1998, p. 1; Johnson 1994b, p. 2; Tareen 1990, p. 3). However, in 2000, tribesmen requested that the Society for Torghar Environmental Protection (STEP), the community-based, nongovernmental organization established to administer the TCP, integrate habitat management measures to protect markhor and create better habitat for both markhor and their domestic animals. A habitat management plan for both wildlife and domestic livestock was developed in 2001. The plan emphasizes range management,

improved agriculture, and water storage projects to improve habitat conditions, reduce grazing pressure, eliminate the need for domestic herds to utilize upper slope areas, and, therefore, reduce interactions between domestic livestock and markhor around forage and water resources (Frisina and Tareen 2009, p. 152; Woodford *et al.* 2004, pp. 180, 184; Frisina *et al.* 2002, pp. 3, 8, 16; Ahmed *et al.* 2001, pp. 7, 11).

In addition to livestock management, STEP plans to plant woodlots of indigenous trees to meet the fuel wood and timber requirements of the local tribes and develop orchards and croplands. Agriculture is seen as an alternative to raising livestock and reducing grazing pressure (Frisina and Tareen 2009, p. 152; Ahmed *et al.* 2001, p. 11). STEP will also train locals in livestock management and agricultural practices (Frisina and Tareen 2009, p. 152).

Although we do not know the current status of the management plans described above, if implemented, natural resources would be managed for sustainable use, which would improve the condition of the habitat, and remove the risk of large domestic livestock herds moving into the higher elevation areas in search of forage. Improved management of livestock and improved agricultural practices would reduce grazing pressure and deforestation in the lower slopes and valleys of the Torghar Hills. Without implementation of the management plans, the habitat of the Torghar Hills will continue to be impacted by grazing pressure and deforestation.

Summary of Factor A

Habitat modification is thought to have partially contributed to the decline of the straight-horned markhor. We do not have information on the current extent of habitat modification or effects on the straight-horned markhor in much of its range. In general, habitat throughout the range of the straight-horned markhor is threatened by deforestation for logging, fuel, charcoal, and building materials and by overgrazing of domestic livestock. In the Torghar Hills, however, the topography of the upland slopes and high-elevation areas has minimized human influence and grazing pressure. The habitat in these areas is in good condition; however, in drought conditions, or if the number and size of domestic herds are not controlled, these areas may experience increased grazing pressure from domestic sheep and goats in search of additional forage. The lower slopes and valleys, which are utilized by markhor and may become more important in supporting an increasing population, have experienced heavy grazing pressure and deforestation for building materials and fuel.

Plans are in place by STEP to address habitat management and protection in the Torghar Hills. If implemented, these plans would reduce grazing pressure and deforestation in the lower slopes and valleys of the Torghar Hills, eliminate the need for herds to graze in upland slopes, and manage the natural resources for sustainable use. As part of this proposed rule, we are requesting information from the public about the efficacy of these plans and the effect they are having on improving markhor habitat.

Although we have minimum information on habitat modification in much of the range of the straight-horned markhor, habitat modification is thought to have partially



contributed to the decline of the subspecies across its range and has been identified as a current threat to the straight-horned markhor. In the Torghar Hills, habitat modification is not currently a threat to the straight-horned markhor in the upland slopes, but may become a threat in the future if herds and rangelands are not properly managed. The lower slopes and valleys have been subject to heavy grazing pressure and deforestation. Without information to indicate whether the condition of the habitat in the rest of the range of the straight-horned markhor has improved or is being managed, we conclude that habitat modification remains a threat to the subspecies. Therefore, we find that habitat modification is a threat to the straight-horned markhor.

*B. Overutilization for commercial, recreational, scientific, or educational purposes.*

Tribes that live within the range of the straight-horned markhor have a long tradition of hunting on their land (Frisina and Tareen 2009, p. 146; Ahmed *et al.* 2001, p. 2). Prior to the beginning of the Soviet-Afghan War in 1979, few animals were hunted, as weapons were primitive and ammunition scarce and expensive (Ahmed *et al.* 2001, p. 2). However, after the beginning of the war, there was an influx of more sophisticated weapons, such as semi- and fully-automatic rifles, and cheap ammunition was more accessible. This, along with millions of refugees moving into the area, led to indiscriminate killing of wildlife throughout Pakistan and critically low populations of straight-horned markhor (Frisina and Tareen 2009, p. 145; Woodford *et al.* 2004, p. 181; Ahmed *et al.* 2001, pp. 2, 4; Johnson 1994b, p. 1).

In an effort to manage the diminishing wildlife populations, the National Council for Conservation of Wildlife (the Scientific and Management Authorities for CITES in Pakistan) implemented a 3-year ban on hunting of all big game species in Pakistan, including markhor, in 1988. In 1991, the ban was extended for another 3 years. However, the ban had little impact on the recovery of wildlife populations (Ahmed *et al.* 2001, p. 5). In 1999, the Federal Cabinet decided to reinstate the ban for the 2000–2001 hunting season. In 2000, community trophy hunting programs were exempted from this ban (Shackleton 2001, p. 14). We did not find information on whether a ban on hunting of big game species is currently in place.

The straight-horned markhor has been extirpated from much of its former range due to over-hunting (Johnson 1994b, p. 5; Johnson 1994, p. 10). There is no current information on the extent of poaching taking place in most of the subspecies' range. However, markhor populations significantly increased only in conservation areas managed for trophy hunting, and the only conservation plan being implemented for the straight-horned markhor is in the Torghar Hills (Government of Pakistan 2009, p. viii).

In the early 1980s, local tribal leaders became alarmed at the significant decline in the markhor population in the Torghar Hills (Frisina and Tareen 2009, p. 145; Ahmed *et al.* 2001, p. 4; Johnson 1994b, p. 1). At this time, the population had reached a critical level, estimated at fewer than 200 (Ahmed *et al.* 2001, p. 4; Johnson 1994b, p. 14; Mitchell, 1989, p. 9). The tribal leaders attributed the decline to an increase in poaching due to the significant increase in weapons in the area during the Afghan War (Frisina and

Tareen 2009, p. 145; Johnson 1994b, p. 1). After unsuccessful attempts to receive assistance from the Balochistan Forest Department, they turned to wildlife biologists in the United States, including the U.S. Fish and Wildlife Service. Together, they developed the TCP, an innovative, community-based conservation program that allows for limited trophy hunting to conserve local populations of markhor, improve habitat for both markhor and domestic livestock, and improve the economic conditions for local tribes in Torghar (Frisina and Tareen 2009, p. 146; Woodford *et al.* 2004, p. 182; Ahmed *et al.* 2001, p. 4 Johnson 1994b, pp. 1–2).

In 1985, the TCP was launched and covered most of the Torghar area (approximately 1,000 square kilometers (386 square miles)). First, tribal leaders implemented a ban on all hunting activities by tribesmen in the Torghar Hills. Then, local tribesmen were hired as game guards to assist in population surveys and prevent poachers from entering the Torghar Hills. Guards were placed at points of entry into the protected area to inform migrating tribesmen of the hunting ban, who, in turn, agreed to the ban so as not to jeopardize their passage through the Torghar Hills. Support for the program, including salaries for the game guards, is raised through fees for limited trophy hunting of markhor within the TCP, mostly by foreign game hunters. Currently, markhor fees are \$35,000 U.S. dollars, 80 percent of which goes to the TCP and the other 20 percent goes to the Pakistani government. In the beginning, 7 game guards were hired; currently, 82 game guards are employed. The number of markhor allowed to be hunted each year is based on surveys conducted by game guards and wildlife biologists (Frisina and Tareen 2009, pp. 142, 146–147; Ahmed *et al.* 2001, p. 5; Johnson 1994b, p. 3).

Numbers of animals taken have ranged from 1 to 5 animals per hunting season, or less than the 1 or 2 percent of the total male population recommended by Harris (1993 in Woodford *et al.* 2004, p. 182) annually for trophy hunting (Frisina and Tareen 2009, pp. 146–147, 149; Ali 2008, p. 20; Woodford *et al.* 2004, p. 182; Johnson 1997, pp. 403–404). Because markhor have a polygynous mating system, reproduction rates have not been affected by the removal of a limited number of adult males (Woodford *et al.* 2004, p. 182), as evidenced by the continuing increase in the Torghar Hills population.

As a result of the TCP, poaching has essentially been eliminated in the Torghar Hills (Woodford *et al.* 2004, p. 182; Johnson 1994b, p. 3). Johnson (1994b, p. 15) attributed the markhor population growth (estimated to be fewer than 200 animals in the mid-1980s and is now (2012) estimated to be more than 3,000 animals) to the substantial reduction in mortality when uncontrolled hunting was stopped. The TCP is the oldest community-controlled program in Pakistan and has been so successful that tribal groups in other mountain ranges of Balochistan have expressed interest in setting up similar programs (Frisina and Tareen 2009, p. 147; Ahmed *et al.* 2001, p. 11).

Straight-horned markhor in the Torghar Hills, and other subspecies of markhor within community-managed conservation areas in Pakistan, may be legally hunted and exported. In 1997, at the 10<sup>th</sup> meeting of the Conference of the Parties to CITES, the Government of Pakistan submitted a proposal for approval of an annual export quota for sport-hunted markhor trophies to act as an incentive to communities to conserve markhor. During that same meeting, the Conference of the Parties approved an annual export quota

of 6 sport-hunted markhor trophies for Pakistan (Resolution Conf. 10.15). Due to the success of conservation programs in Pakistan, CITES increased the annual export quota to 12 markhor in 2002, to further encourage community-based conservation (Ali 2008, p. 24; Resolution Conf. 10.15 (Rev. CoP 14)).

Data obtained from the United Nations Environment Programme—World Conservation Monitoring Center (UNEP-WCMC) CITES Trade Database show that, from July 1975, when the straight-horned markhor was listed in Appendix I, through 2010, a total of 47 specimens of this subspecies were reported to UNEP-WCMC as (gross) exports. Of those 47 specimens, 34 were trophies, and 13 were live animals. In analyzing these data, it appears that one record may be an over-count due to a slight difference in the manner in which the importing and exporting countries reported their trade. It is likely that the actual number of straight-horned markhor specimens in international trade during this period was 45, including 34 trophies and 11 live animals. Thirty-three of the trophies were reported as wild, and 1 was reported with the source unknown. Exports from range countries included: 33 trophies from Pakistan and 1 trophy from Afghanistan.

Because the straight-horned markhor is listed as an Appendix-I species under CITES, legal international trade is very limited. Because there has been very limited trade in straight-horned markhor, totaling 45 specimens over 36 years, we believe that international trade controlled via valid CITES permits is not a threat to the subspecies.

## Summary of Factor B

Over-hunting is known to have devastated populations of straight-horned markhor to critically low populations throughout Pakistan. In conservation areas managed for trophy hunting, populations of ungulates have significantly increased. Due to the formation of the TCP, the subsequent ending of uncontrolled poaching, and the hunting of only a limited number of trophies in the Torghar Hills, the population has increased substantially since 1985. Consequently, we find that poaching and hunting are not threats to the straight-horned markhor population in the Torghar Hills. There are no other populations of straight-horned markhor under management plans. Although the Torghar Hills population is increasing, the other populations of straight-horned markhor are reported as declining. Given that the cessation of poaching in the Torghar Hills was a direct result of the TCP, and the other populations are not under a management plan, it seems likely that poaching remains a threat to the straight-horned markhor outside of the Torghar Hills. Based on the UNEP-WCMC CITES Trade Database, few straight-horned markhor have been reported in trade from 1975 to 2010. Therefore, we believe that international trade controlled via valid CITES permits is not a threat to this subspecies. Overall, we find that overutilization for commercial, recreational, scientific, or educational purposes is a threat to the straight-horned markhor, with the exception of the Torghar Hills population.

### *C. Disease or predation.*

#### Disease

Information on diseases that occur in straight-horned markhor or the risk of disease transmission to straight-horned markhor is very limited. The information we obtained comes from studies and observations in the Torghar Hills. In this population, the potential for disease transmission comes from livestock-wildlife interactions due to overgrazing of large herds of livestock, drought conditions, and the migration of flocks through the Torghar Hills. Habitat management plans, if implemented, could reduce this risk. See discussion under *Present or threatened destruction, modification, or curtailment of habitat or range*.

Overlap between domestic livestock and markhor appears to be minimal (Frisina *et al.* 2002, p. 8; Mitchell 1989, p. 11), and currently, there is no evidence of disease transmission between livestock and markhor (Woodford *et al.* 2004, p. 184; Frisina *et al.* 2002, p. 13). However, Woodford *et al.* (2004, p. 183) identified disease transmission from domestic livestock as a future threat to the markhor of Torghar Hills. It appears that the risk of disease transmission is linked to future and continued habitat and livestock management. The risk of disease transmission is particularly severe with uncontrolled numbers of domestic livestock or during periods of drought. During these circumstances, resources are limited, interactions are more frequent around available water sources, and domestic herds may be forced to utilize upper slopes. Additionally, incidents of interaction may increase with larger domestic livestock herds and the expanding markhor population (Woodford *et al.* 2004, p. 183).

STEP has discussed the establishment of a community-based Animal Health

Service, and the herdsmen within the TCP have agreed to this measure. As it is not feasible to vaccinate markhor in mountainous terrain, STEP will train and equip tribesmen to act as “barefoot vets” with the responsibility of traveling through the TCP vaccinating domestic sheep and goats, and administering appropriate anthelmintics (drugs that expel parasitic worms). However, veterinary care will only be effective if range and livestock management plans are implemented, resulting in smaller, healthier domestic livestock herds (Woodford *et al.* 2004, p. 185).

Although there is currently no evidence of disease transmission between livestock and markhor (Woodford *et al.* 2004, p. 184; Frisina *et al.* 2002, p. 13), if implemented, the plans developed by STEP to improve habitat for markhor will also improve livestock management and agriculture practices, will minimize interaction between domestic livestock and wildlife, and will therefore lower the risk of disease transmission. Coupled with the planned Animal Health Service, the risk of diseases being transferred from domestic livestock to markhor will be significantly reduced. However, at this time, we do not know the status of the habitat management plans or the Animal Health Service, or the effect that the actions have had on reducing the risk of disease to the straight-horned markhor.

In the rest of the straight-horned markhor’s range, we have no information on the occurrence of disease or the risk of disease transmission from domestic sheep and goats. Over-grazing of domestic livestock has contributed to habitat loss in other mountain ranges, suggesting large livestock herds have also been maintained in these areas, but we



do not have information on herd size or the likelihood of livestock-wildlife interactions. Given the extremely small population estimates of straight-horned markhor outside of the Torghar Hills, it may be that interactions are rare.

### Predation

The main predators of all subspecies of markhor are Himalayan lynx (*Felis lynx*), snow leopards (*Uncia uncia*), wolves (*Canis lupus*), and Asian black bears (*Ursus tibetanus*). Golden eagles (*Aquila chrysaetos*) are also reported to prey on young markhor (Ali 2008, pp. 20–21). Although once abundant in the mountains of northern Balochistan, many big game species, like leopards and black bears, suffered severe declines due to overhunting. In the Torghar Hills, these species were extirpated or near extirpation by the mid-1980s. Today, the only potential predators that remain in the Torghar Hills are small populations of wolves (*Canis lupus*) and hyaenas (*Hyaena hyaena*) (Woodford *et al.* 2004, p. 181). We found no reports on predation of straight-horned markhor specifically or information indicating predation is a threat to this subspecies.

### Summary of Factor C

Although livestock-wildlife interactions are minimal in the Torghar Hills, and currently there is no evidence of disease transmission between livestock and markhor, if habitat and livestock management are not implemented, the risk of disease transmission to markhor will increase. STEP has developed plans to address range management and reduce the risk of disease transmission, and has developed an Animal Health Service,

which would further reduce the risk of disease in straight-horned markhor; however, we do not know the status of these plans and the effect they may have on reducing the risk of disease to straight-horned markhor. Therefore, we find that disease is a threat to the straight-horned markhor in the Torghar Hills. In the other mountains of the straight-horned markhor's range, we do not have information on the occurrence of disease, the size of domestic herds, the likelihood of livestock-wildlife interactions, or, therefore, the risk of disease transmission. We also found no information suggesting that disease is a threat to these populations of straight-horned markhor. However, the scattered populations of straight-horned markhor outside of Torghar Hills occur at low densities such that interactions with livestock are likely to be minimal. As a result, we find that disease is not a threat to the straight-horned markhor in the rest of its range.

Although predators of markhor have been identified, and some potential predators remain in the Torghar Hills, we do not have any information suggesting that predation is affecting the status of the straight-horned markhor; therefore we find that predation is not a threat to the straight-horned markhor.

*D. Inadequacy of existing regulatory mechanisms.*

Federal Laws

Both the federal and provincial governments of Pakistan are allowed to legislate on matters governing resources; however, the federal government does not legislate on natural resource conservation and use, except in cases of international trade and national

security (Ahmed and Kazi 2008, pp. 13, 24). There is no federal law that establishes principles of wildlife conservation and use to be applied in all provinces. Additionally, there is no federal legislation that provides a framework for managing forests as ecosystems, to conserve them as habitat for wildlife, or to protect rare or threatened species (Ahmed and Kazi 2008, pp. 14, 36, 38). Federal laws do exist to govern the process of those institutions that affect natural resources to ensure orderly conduct and achievement of commercial objectives or the prospecting and exploitation of those resources for continued availability for future exploitation (Ahmed and Kazi 2008, pp. 13–14, 32, 36).

The British Glanders and Farcy Act of 1899, enacted when the area that is now modern-day Pakistan was under British rule, addresses communicable diseases within domestic livestock. This federal law allows steps to be taken to control the spread of disease among domestic animals. Specified precautionary measures also prevent the spread of disease to wild animals. However, the provisions apply to horses, camels, and mules, but not to sheep and goats (Aurangzaib and Pastakia 2008, pp. 57, 64).

In general, federal laws do not apply in Federally Administered Tribal Areas (FATAs), Provincially Administered Tribal Areas (PATAs), or the Northern Areas (Ahmed and Khazi 2008, pp. 13, 24). Balochistan does not have any FATAs, but has several PATAs. According to the Pakistan Constitution, PATAs in Balochistan include the Zhob District, where the Torghar Hills is located, and the Laralai District (Aurangzaib and Pastakia 2008, p. 23). However, even in areas where federal laws are applicable,

laws related to natural resources do not address conservation or use, but focus on commercial objectives and future exploitation. Additionally, the federal law addressing the spread of communicable diseases within domestic livestock and to wild animals is not applicable to sheep and goats, and therefore, does not provide any protections to the straight-horned markhor. Therefore, there are no federal laws that provide protections adequate to ameliorate threats to the straight-horned markhor from habitat loss, poaching, or disease.

### Provincial Laws

Legislating for natural resource protection, including the protection of wildlife and forests, is left primarily to provincial governments (Ahmed and Kazi 2008, p. 13; Aurangzaib and Pastakia 2008, pp. 6–8, 24). Balochistan has one wildlife act, the Balochistan Wildlife Protection Act of 1974 (BWPA) (Aurangzaib and Pastakia 2008, p. 28). Under this law, the straight-horned markhor is listed as a protected animal under the Third Schedule (BWPA 1977, p. 15). Species listed under this Schedule shall not be hunted, killed, or captured (Aurangzaib and Pastakia 2008, p. 58). Penalties for violations include a maximum of 2 years in prison and/or a fine of 1,000 rupees (\$18.27 U.S. dollars). All second and subsequent violations are punishable with a 1-year prison term and/or a fine of 1,000 rupees (\$18.27 U.S. dollars), plus confiscation of weapons, vehicles, and equipment used in the violation. The violator's hunting license is also revoked, and the violator is barred from obtaining a new hunting license for 10 years (Aurangzaib and Pastakia 2008, p. 60). Under the Second Schedule, possession, transfer, or export of markhor horns requires a certificate of lawful possession (BWPA 1977, p.

14). The First Schedule lists game animals that may only be hunted, killed, or captured by license (BWPA 1977, p. 11).

The BWPA does not provide specifically for conservation of wildlife, and the protections are weak due to broad exemptions. For example, the government retains the right to allow the killing or hunting of animals for scientific or public purposes (Frisina and Tareen 2009, p. 145; Aurangzaib and Pastakia 2008, pp. 28, 58; Ahmed *et al.* 2001, p. 5; Johnson 1997, p. 397).

The BWPA also allows for the designation of protected areas, such as national parks, sanctuaries, and game reserves, and prohibits certain activities within these areas (Aurangzaib and Pastakia 2008, p. 65). Sanctuaries are to serve as undisturbed breeding grounds for the protection of wildlife, but the purposes of national parks and game reserves are not specified. Although this law allows for the designation of protected areas, it does not specify criteria for designation (Aurangzaib and Pastakia 2008, pp. 65–66).

Within a sanctuary, or within 500 yards (1,500 ft) of its perimeter, hunting, killing, or capture of wild animals is prohibited. In those areas, it is also illegal to take up residence, cultivate land, damage vegetation, light fires, pollute water, or introduce livestock or allow domestic animals to graze (Aurangzaib and Pastakia 2008, pp. 65–66). Within a national park, or within a half-mile of its boundary, it is unlawful to hunt, kill, or capture wildlife. In those areas, clearing or breaking up of land for cultivation,

mining, or other purposes; felling, tapping, damaging, or destroying plants and trees; and collecting or removing plants or trees is prohibited. The BWPA also prohibits acts like discharging a weapon, which may disturb an animal or interfere with breeding (Aurangzaib and Pastakia 2008, pp. 58, 67). These prohibitions, however, are subject to broad exemptions. Within a national park, exemptions may be granted for scientific purposes, betterment of the national park, or any other purpose. Vegetation may be destroyed in wildlife sanctuaries and game reserves for scientific purposes, aesthetic enjoyment, or the betterment of the sanctuary or reserve. Additionally, the government may allow the exploitation of forest produce (Aurangzaib and Pastakia 2008, pp. 45, 59).

In Balochistan, there are 2 national parks and over 20 wildlife sanctuaries and game reserves (Aurangzaib and Pastakia 2008, p. 65). The straight-horned markhor has been recorded in the Hazarganji Chiltan National Park (Wildlife of Pakistan 2002, unpaginated). We do not have information on the location of the wildlife sanctuaries or game reserves or if the straight-horned markhor occurs within any of these areas.

The Land Preservation Act of 1900 is a Punjab law that, by default, was applied to the newly created Balochistan province in 1970. This law allows the government to provide for the prevention of soil erosion and the conservation of sub-soil water. Activities such as clearing, breaking up, or cultivating land not ordinarily under cultivation; quarrying stone or burning lime; cutting trees or removing forest produce; setting fire to trees, timber, or forest produce; and herding or pasturing goats and sheep are prohibited. However, the government may permit inhabitants to carry out such

activities (Aurangzaib and Pastakia 2008, p. 39).

In Balochistan, the forest sector is governed by the Forest Act of 1927, a federal statute that operates as provincial law. Other forest laws exist, but none covers all aspects of forest management (Aurangzaib and Pastakia 2008, p. 42). The Forest Act of 1927 allows for the creation of various classes of forests, the reservation of state-owned forest land, and for the provincial government to assume control of privately owned forest land and declare government-owned land to be a protected area. It also prohibits grazing, hunting, quarrying, or clearing for cultivation; removal of forest produce; or the felling or lopping of trees and branches in reserved or protected forests (Aurangzaib and Pastakia 2008, p. 46). In protected forests, cutting or damaging trees, quarrying cultivation, and setting fires is punishable by up to 6 months in prison and or a fine of 500 rupees (\$9.13 U.S. dollars) (Aurangzaib and Pastakia 2008, p. 46).

Special provisions are in place for juniper forests. It is illegal to fell or girdle a juniper tree, or to lop, tap, burn, damage, or strip bark from a juniper tree, regardless of whether the tree is standing, felled, or fallen. It is also illegal to remove a felled or fallen juniper tree or its parts for sale. Offenses related to juniper trees are punishable by imprisonment for 1 year and/or a fine of 5,000 rupees (\$91.33 U.S. dollars). The Forest Act also allows the government to regulate privately owned forests under certain circumstances. In these cases, the government may prohibit grazing, setting fires, and clearing land for cultivation (Aurangzaib and Pastakia 2008, p. 46).

The Forest Act of 1927 does not provide for sustainable use, conservation, or the protection of endangered wildlife within forests. Legislation related to forests restricts subsistence use, but focuses on maximizing commercial exploitation. This may be because current laws date back to the early 20<sup>th</sup> century and reflect priorities of that time. Provincial amendments have done little to alter the focus of these laws. Enforcement of forest laws is lacking, and where enforcement is possible, penalties are not severe enough to serve as a deterrent to violators. Furthermore, these laws may be overridden by other laws in favor of development and commercial uses (Aurangzaib and Pastakia 2008, pp. 42–43).

There are some laws that provide protection to trees rather than forests. As described above, the BWPA prohibits the clearing of trees, although this protection only applies within protected areas. The Land Preservation Act restricts the felling of trees to prevent soil erosion (Aurangzaib and Pastakia 2008, p. 42).

Despite provincial laws, Pakistani authorities have not been able to slow the decline of important wildlife species, such as the markhor (Johnson 1997, p. 394). Enforcement is very difficult to achieve due to the remoteness of many areas, the political situation in remote areas, conflicting policies, lack of understanding of the need and importance of conservation, and economic constraints (Hess *et al.* 1997, p. 243). Additionally, like federal laws, provincial laws do not apply in FATAs, PATAs, or the Northern Areas (Ahmed and Khazi 2008, pp. 13, 24). According to the Pakistan Constitution, PATAs in Balochistan include the Zhob and Laralai districts (Aurangzaib



and Pastakia 2008, p. 23). For a federal or provincial law to apply, the provincial governor must, with the approval of the president, issue a directive to that effect (Aurangzaib and Pastakia 2008, p. 24). The BWPA states specifically in section 1(2) that the law extends to all of Balochistan except for the tribal areas. Although we do not have specific information on whether the other laws described above were directed to tribal areas, it appears that many of the areas where the straight-horned markhor occur are not subject to these laws as they are located in the PATAs of the Zhob and Laralai districts. In areas where the laws may be applicable, it does not appear that provincial laws have provided adequate protection given the severe declines in straight-horned markhor caused by habitat loss and poaching, and given the threats the markhor continues to face from habitat loss, poaching, and disease.

#### International Laws

In 1975, the straight-horned markhor was listed in Appendix I of CITES. CITES is an international agreement between governments to protect plant and animal species listed in its Appendices from over-exploitation through international trade. There are currently 175 CITES Parties (member countries or signatories to the Convention). CITES Parties regulate the import, export, and reexport of live or dead plants or animals as well as parts and products of Appendix-listed plant and animal species, through a system of permits and certificates administered by the designated CITES Scientific and Management Authorities of each Party.

An Appendix-I listing includes species threatened with extinction which are or may be affected by trade; trade of these species is permitted only under exceptional circumstances. Commercial trade in Appendix-I specimens is generally precluded. Trade in Appendix-I species requires the issuance of both import and export permits. Import permits for Appendix-I species are issued only if findings are made that the import would be for purposes that are not detrimental to the survival of the species, the proposed recipient of a live specimen is suitably equipped to house and care for it, and that the specimen will not be used for primarily commercial purposes (CITES Article III(3)). Export permits for Appendix-I species are issued only if findings are made that the specimen was legally acquired; the trade is not detrimental to the survival of the species; any specimen will be prepared and shipped to minimize the risk of injury, damage to health or cruel treatment; and if the issuing authority is satisfied that an import permit has been granted for the specimen (CITES Article III(2)).

In the United States, CITES is implemented through the U.S. Endangered Species Act of 1973, as amended (Act). The Act designates the Secretary of the Interior (Secretary) as having the lead responsibility to implement CITES for the United States, with the functions of the Management and Scientific Authorities to be carried out by the Service.

Hunting and export of markhor trophies is allowed from community-managed conservation areas in Pakistan. See discussion above under *Overutilization for commercial, recreational, scientific, or educational purposes*. To encourage

communities to conserve populations of markhor, the Conference of the Parties to CITES approved an annual export quota of 12 sport-hunted trophies of markhor to be taken through trophy-hunting programs. As discussed above under Factor B, due to the limited number of specimens reported in trade, we do not consider international trade to be a threat impacting this subspecies.

In addition to CITES, Pakistan is Party to other major multilateral treaties that address natural resource conservation and management (Ahmed and Khazi 2008, p. 31). Among these are the Convention on Biological Diversity, World Heritage Convention, and the Convention on Combating Desertification (Ahmed and Khazi 2008, pp. 14, 31). In becoming a Party to these treaties, Pakistan assumed obligations to implement the treaties' provisions, which in many cases requires legislation. However, Pakistan has no federal law to implement these obligations (Ahmed and Khazi 2008, pp. 14, 31; Aurangzaib and Pastakia 2008, p. 65). Provincial governments are responsible for legislating natural resources. Balochistan's single wildlife law, the BWPA, does not meet the country's obligations regarding conservation of biodiversity or trade in endangered species (Aurangzaib and Pastakia 2008, p. 58). Therefore, these treaties, in and of themselves, do not provide adequate protections to ameliorate threats faced by the straight-horned markhor.

#### Conservation Plans

Populations of ungulates in Pakistan have significantly increased under trophy hunting programs (Government of Pakistan 2009, p. viii). The only conservation

program of any type for the straight-horned markhor is the TCP, which covers the Torghar Hills population. The population here has been under this conservation program since 1985. As previously described, the TCP began after local tribal leaders were concerned over the diminished markhor population.

The main cause of declines in markhor populations was thought to be uncontrolled poaching. The TCP effectively eliminated this threat and has allowed the straight-horned markhor population in the Torghar Hills to steadily increase. The TCP not only addresses the threat of hunting, but agriculture and range management plans have been recently developed to address habitat loss and disease (see discussions under Factors A and C, above). Therefore, we find that the TCP provides adequate protection to the markhor from poaching, but we do not yet have information indicating that it provides adequate protection against habitat loss and disease.

#### Summary of Factor D

Although the federal government of Pakistan could legislate on matters relating to natural resources, this matter is left to provincial governments. There are several provincial laws in place meant to give some protection to natural resources; however, they are subject to broad exemptions, allowing for overriding laws favoring development and commercial use. Given the threats faced by the straight-horned markhor from habitat loss, poaching, and disease, it appears that these regulatory mechanisms do not provide adequate protections to the subspecies. In the Torghar Hills, effective implementation and enforcement of the TCP has led to the cessation of poaching of markhor and a

persistent growth in the markhor population; therefore, the TCP has provided adequate protection against poaching. Habitat modification and disease remain current and potential threats to the straight-horned markhor of the Torghar Hills. Management plans are being developed to address habitat loss and disease prevention; however, we do not know the status or effectiveness of these plans. Therefore, we find that, overall, inadequate regulatory mechanisms are a threat to the straight-horned markhor.

*E. Other natural or manmade factors affecting the species' continued existence.*

Consideration of ongoing and projected climate change is a component of our analyses to determine the appropriate status of the markhor under the Act. Described in general terms, “climate change” refers to a change in the state of the climate (whether due to natural variability, human activity, or both) that can be identified by changes in the mean or variability of its properties (e.g., temperature, precipitation) and that persists for an extended period, typically decades or longer (Intergovernmental Panel on Climate Change (IPCC) 2007, p. 30). Various types of changes in climate can have direct or indirect effects on species, and these may be positive or negative depending on the species and other relevant considerations, such as the effects of interactions with non-climate conditions (e.g., habitat fragmentation). We use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change that are relevant to the straight-horned markhor.

Since the beginning of the 20<sup>th</sup> century, Pakistan has experienced a consistent rising trend in mean surface temperatures (Farooqi *et al* 2005, p. 13). Ahmed *et al.* (2010, pp. 17, 21) found that temperatures in January, a core winter month in Pakistan, increased over a 46-year time period (1961–2006) across Pakistan and especially in northwestern Balochistan. Projections through 2050 for Pakistan include increasing surface temperatures, increasing magnitude and frequency of extreme rainfall events, and strengthening monsoon circulation. Additionally, arid and semi-arid regions could experience severe droughts (Farooqi *et al.* 2005, pp. 16–18).

Drought is a common occurrence in Balochistan; as such, we do not know if climate change will affect markhor and their habitat. STEP has developed habitat and range management plans, which could help minimize effects of climate change by reducing the number of domestic livestock, decreasing habitat loss, and increasing water availability through water storage projects. Although we do not know the effectiveness of these plans under changing climatic conditions, we did not find any information that rising temperatures have had an effect on the status of the markhor such that climate change rises to the level of a threat, nor did we find any information indicating that climate change may become a threat to the straight-horned markhor.

#### Summary of Factor E

To date, Pakistan has experienced a warming trend, yet there is no information to indicate that the straight-horned markhor has been negatively affected. Although information indicates changes in the climate of Balochistan could affect mountain habitat,

we do not have information on the extent of these changes or the projected response of straight-horned markhor. Drought is a common occurrence in Balochistan, and it is reasonable to assume that the markhor has evolved with varying degrees of drought.

We are not aware of any other scientific or commercial information that indicates other natural or manmade factors pose a threat to this subspecies. We also do not find that climate change is or may become a threat to the straight-horned markhor. As a result, we find that other natural or manmade factors are not threats to the straight-horned markhor.

## **Finding**

As required by the Act, we conducted a review of the status of the species and considered the five factors in assessing whether the straight-horned markhor is endangered or threatened throughout all or a significant portion of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the straight-horned markhor. We reviewed the 1999 petition submitted by Tareen, the 2010 petition submitted by Jackson, information available in our files, and other available published and unpublished information.

The straight-horned markhor occurs in small, scattered populations in extremely rugged terrain of the mountains of Balochistan, including the Murdar, Takhatu, Zarghun, Kaliphat, Phil Garh, Suleiman, Shingar, and Toba Kakar ranges. In 1975, as few as 1,000

straight-horned markhor were estimated to survive throughout the subspecies' range. It is unlikely that the number of straight-horned markhor has increased in much of its range, and, in general, markhor populations are reported as declining, but there is one exception, the Torghar Hills population in the Toba Kakar Range. Due to the implementation of a conservation plan, the Torghar Hills population has increased from fewer than 200 in the mid-1980s to 3,158 currently.

Throughout the range of the straight-horned markhor, deforestation for logging, livestock grazing, and collection for building materials, fuel, charcoal, and food threaten straight-horned markhor habitat.

Due to the formation of the TCP, the cessation of uncontrolled poaching, and the hunting of only a limited number of trophies in the Torghar Hills, the population has increased substantially since TCP's inception in 1985. We are not aware of other populations of straight-horned markhor under the same level of management. Given that the cessation of poaching in the Torghar Hills was a direct result of the TCP and we are unaware of any other portions of the subspecies' range that are subject to a management program that protects against uncontrolled hunting, we find that poaching remains a threat in the rest of the straight-horned markhor's range.

Disease has been identified as a future threat to the Torghar Hills population. The risk of disease transmission comes from forced interactions between livestock and



markhor around limited forage and water resources, due either to drought conditions and/or overgrazing of large domestic herds of sheep and goats.

There are several provincial laws in place meant to give some protection to natural resources, but they are subject to broad exemptions, allowing for overriding laws favoring development and commercial use, and enforcement is lacking. However, in the Torghar Hills, the population of straight-horned markhor has been effectively managed by the TCP such that poaching is no longer a threat to this population and the population has increased. Given the success of the TCP in ameliorating threats faced by the straight-horned markhor from poaching, it appears that this regulatory mechanism for the Torghar Hills population of straight-horned markhor is providing adequate protection to the subspecies from poaching, which was once the markhor's greatest threat.

Lastly, Pakistan has experienced warming trends that are projected to continue, and could lead to more frequent and severe droughts. However, markhor have evolved within habitat that experiences frequent and sustained drought events. We do not have enough information to determine that climate change is a threat to the straight-horned markhor.

Section 3 of the Act defines an “endangered species” as “any species which is in danger of extinction throughout all or a significant portion of its range,” and a “threatened species” as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Some

of the straight-horned markhor populations are small and declining. Threats to this subspecies from habitat loss, poaching, and disease still exist and will likely continue into the foreseeable future. At the same time, regulatory mechanisms are inadequate to ameliorate the negative effects of these threats on the subspecies. However, in the Torghar Hills, the greatest cause of the significant declines in markhor populations, poaching, has been virtually eliminated due to the implementation of the TCP. The population here has been increasing since the inception of the TCP and, today, is the stronghold of the subspecies. Due to the conservation measures and the incentives of the TCP, the straight-horned markhor has increased from approximately 1,000 markhor across its range to at least 3,158 individuals, which are represented by the Torghar Hills population. The success of this program has contributed greatly to the conservation of the subspecies by recovering the straight-horned markhor from the brink of extinction. This increase in abundance has contributed to the subspecies' overall resiliency such that it is less susceptible to the threats that we have identified. Additionally, information suggests that intermountain exchange or movement is occurring between the Torghar Hills and other mountain range areas, thereby providing a margin of safety for the species to withstand catastrophic events. See discussion under *Distinct Vertebrate Population Segment*. Thus, we find that threats identified under Factors A, B, C, and D, when combined with the increase in the straight-horned markhor population and the protective measures provided to the Torghar Hills population by the TCP, are not of sufficient imminence, intensity, or magnitude to indicate that the straight-horned markhor is presently in danger of extinction, and, therefore, the straight-horned markhor does not meet the definition of endangered under the Act. On the basis of the best scientific and

commercial information, we find that the straight-horned markhor meets the definition of a “threatened species” under the Act, and we are proposing to list the straight-horned markhor as threatened throughout its range.

#### *Distinct Vertebrate Population Segment*

Section 3(16) of the Act defines “species” to include any species or subspecies of fish and wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). Under the Service’s “Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act” (61 FR 4722, February 7, 1996), three elements are considered in the decision concerning the establishment and classification of a possible distinct population segment (DPS). These elements, which are applied similarly for additions to or removals from the Federal List of Endangered and Threatened Wildlife, include:

- (1) The discreteness of a population in relation to the remainder of the species to which it belongs;
- (2) The significance of the population segment to the species to which it belongs; and
- (3) The population segment’s conservation status in relation to the Act’s standards for listing, delisting, or reclassification (i.e., is the population segment endangered or threatened?).

#### Discreteness

Under the DPS policy, a population segment of a vertebrate taxon may be

considered discrete if it satisfies either one of the following conditions:

- (1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.
- (2) It is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.

We reviewed available information to determine whether any population, including the Torghar Hills population, of the straight-horned markhor meets the first discreteness condition of our 1996 DPS policy. We found no evidence that any population was markedly separated from other markhor populations as a consequence of physical, physiological, ecological, or behavioral factors. Additionally, we are not aware of measures of genetic or morphological discontinuity that provide evidence of marked separation. With respect to Torghar Hills, the boundaries are unclear and appear to grade into other ranges within the Toba Kakar Mountains. Additionally, Johnson (1994b, p. 15) noted that if the Torghar Hills population reaches carrying capacity, it could become a source of emigrants for other mountain ranges in the area and that intermountain movement is probably already taking place. Since that publication, the Torghar Hills population has increased from 695 markhor to 3,158, indicating a greater likelihood that intermountain movement of markhor is taking place. We currently do not know the extent, if any, that markhor are moving from the Torghar Hills into other mountain ranges; however, it appears that they could. Movement may require markhor to cross

unsuitable habitat (e.g., the TCP is surrounded by less severe topography and valleys typically not preferred by markhor), but there is no reason that they could not cross, especially if carrying capacity is met and there is a need to emigrate to other suitable areas in adjacent ranges. Therefore, without evidence of marked separation, we determine that none of the populations of the straight-horned markhor meet the first discreteness condition of the 1996 DPS policy.

We next evaluate whether any of the straight-horned markhor populations meet the second discreteness condition of our 1996 DPS policy. A population segment may be considered discrete if it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act. Straight-horned markhor are only found in Pakistan and do not cross international boundaries; therefore, none of the populations of the straight-horned markhor meet the second discreteness condition of the 1996 DPS policy.

We determine, based on a review of the best available information, that none of the populations of the straight-horned markhor, including the Torghar Hills population, meet the discreteness conditions of the 1996 DPS policy. Because we found that the straight-horned markhor populations do not meet the discreteness element under the Service's DPS policy, we need not conduct an evaluation of significance under that policy. We conclude that none of the straight-horned markhor populations qualify as a DPS under the Act.

### *Significant Portion of the Range*

Having determined that the straight-horned markhor meets the definition of threatened throughout its range, we must next consider whether the straight-horned markhor is in danger of extinction within a significant portion of its range.

The Act defines “endangered species” as any species which is “in danger of extinction throughout all or a significant portion of its range,” and “threatened species” as any species which is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The phrase “significant portion of its range” (SPR) is not defined by the statute, and we have never addressed in our regulations either: (1) The consequences of a determination that a species is either endangered or likely to become so throughout a significant portion of its range, but not throughout all of its range; or (2) what qualifies a portion of a range as “significant.”

For the purposes of this finding, we interpret the phrase “significant portion of its range” in the Act’s definitions of “endangered species” and “threatened species” to provide an independent basis for listing; thus there are two situations (or factual bases) under which a species would qualify for listing: a species may be endangered or threatened throughout all of its range; or a species may be endangered or threatened in only a significant portion of its range. If a species is in danger of extinction throughout an SPR, then that species is an “endangered species.” The same analysis applies to

“threatened species.” Based on this interpretation and supported by existing case law, the consequence of finding that a species is endangered or threatened in only a significant portion of its range is that the entire species will be listed as endangered or threatened, respectively, and the Act’s protections will be applied across the species’ entire range.

We conclude, for the purposes of this finding, that interpreting the SPR phrase as providing an independent basis for listing is the best interpretation of the Act because it is consistent with the purposes and the plain meaning of the key definitions of the Act; it does not conflict with established past agency practice, as no consistent, long-term agency practice has been established; and it is consistent with the judicial opinions that have most closely examined this issue. Having concluded that the phrase “significant portion of its range” provides an independent basis for listing and protecting the entire species, we next turn to the meaning of “significant” to determine the threshold for when such an independent basis for listing exists.

Although there are potentially many ways to determine whether a portion of a species’ range is “significant,” we conclude, for the purposes of this finding, that the significance of the portion of the range should be determined based on its biological contribution to the conservation of the species. For this reason, we describe the threshold for “significant” in terms of an increase in the risk of extinction for the species. We conclude that a biologically based definition of “significant” best conforms to the purposes of the Act, is consistent with judicial interpretations, and best ensures species’ conservation. Thus, for the purposes of this finding, and as explained further below, a

portion of the range of a species is “significant” if its contribution to the viability of the species is so important that without that portion, the species would be in danger of extinction.

We evaluate biological significance based on the principles of conservation biology using the concepts of redundancy, resiliency, and representation. *Resiliency* describes the characteristics of a species and its habitat that allow it to recover from periodic disturbance. *Redundancy* (having multiple populations distributed across the landscape) may be needed to provide a margin of safety for the species to withstand catastrophic events. *Representation* (the range of variation found in a species) ensures that the species’ adaptive capabilities are conserved. Redundancy, resiliency, and representation are not independent of each other, and some characteristic of a species or area may contribute to all three. For example, distribution across a wide variety of habitat types is an indicator of representation, but it may also indicate a broad geographic distribution contributing to redundancy (decreasing the chance that any one event affects the entire species), and the likelihood that some habitat types are less susceptible to certain threats, contributing to resiliency (the ability of the species to recover from disturbance). None of these concepts is intended to be mutually exclusive, and a portion of a species’ range may be determined to be “significant” due to its contributions under any one or more of these concepts.

For the purposes of this finding, we determine whether a portion qualifies as “significant” by asking whether *without that portion*, the representation, redundancy, or



resiliency of the species would be so impaired that the species would have an increased vulnerability to threats to the point that the overall species would be in danger of extinction (i.e., would be “endangered”). Conversely, we would not consider the portion of the range at issue to be “significant” if there is sufficient resiliency, redundancy, and representation elsewhere in the species’ range that the species would not be in danger of extinction throughout its range if the population in that portion of the range in question became extirpated (extinct locally).

We recognize that this definition of “significant” (a portion of the range of a species is “significant” if its contribution to the viability of the species is so important that without that portion, the species would be in danger of extinction) establishes a threshold that is relatively high. On the one hand, given that the consequences of finding a species to be endangered or threatened in an SPR would be listing the species throughout its entire range, it is important to use a threshold for “significant” that is robust. It would not be meaningful or appropriate to establish a very low threshold whereby a portion of the range can be considered “significant” even if only a negligible increase in extinction risk would result from its loss. Because nearly any portion of a species’ range can be said to contribute some increment to a species’ viability, use of such a low threshold would require us to impose restrictions and expend conservation resources disproportionately to conservation benefit: listing would be rangewide, even if only a portion of the range of minor conservation importance to the species is imperiled. On the other hand, it would be inappropriate to establish a threshold for “significant” that is too high. This would be the case if the standard were, for example, that a portion of the

range can be considered “significant” only if threats in that portion result in the entire species’ being currently endangered or threatened. Such a high bar would not give the SPR phrase independent meaning, as the Ninth Circuit held in *Defenders of Wildlife v. Norton*, 258 F.3d 1136 (9th Cir. 2001).

The definition of “significant” used in this finding carefully balances these concerns. By setting a relatively high threshold, we minimize the degree to which restrictions will be imposed or resources expended that do not contribute substantially to species conservation. But we have not set the threshold so high that the phrase “in a significant portion of its range” loses independent meaning. Specifically, we have not set the threshold as high as it was under the interpretation presented by the Service in the *Defenders* litigation. Under that interpretation, the portion of the range would have to be so important that current imperilment there would mean that the species would be *currently* imperiled everywhere. Under the definition of “significant” used in this finding, the portion of the range need not rise to such an exceptionally high level of biological significance. (We recognize that if the species is imperiled in a portion that rises to that level of biological significance, then we should conclude that the species is in fact imperiled throughout all of its range, and that we would not need to rely on the SPR language for such a listing.) Rather, under this interpretation we ask whether the species would be endangered everywhere without that portion, *i.e.*, if that portion were completely extirpated. In other words, the portion of the range need not be so important that even the species being in danger of extinction in that portion would be sufficient to cause the species in the remainder of the range to be endangered; rather, the *complete*

*extirpation* (in a hypothetical future) of the species in that portion would be required to cause the species in the remainder of the range to be endangered.

The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that have no reasonable potential to be significant or to analyzing portions of the range in which there is no reasonable potential for the species to be endangered or threatened. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be “significant,” *and* (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address the significance question first or the status question first. Thus, if we determine that a portion of the range is not “significant,” we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is “significant.” In practice, a key part of the determination that a species is in danger of extinction in a significant portion of its range is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats to the species occurs only in portions of the species’ range that clearly would not meet the biologically based definition of “significant,” such portions will not warrant further consideration.

After reviewing the potential threats throughout the range of the straight-horned markhor, we find that threats appear to be affecting the subspecies in the portion of the range outside of the Torghar Hills more severely, particularly with respect to poaching. Applying the process described above for determining whether this subspecies is endangered in a significant portion of its range, we consider significance first to determine if this portion of the straight-horned markhor's range warrants further consideration.

As stated above, a portion of the range of a species is "significant" if its contribution to the viability of the species is so important that without that portion, the species would be in danger of extinction rangewide. We find that if there was a loss of the straight-horned markhor populations outside of the Torghar Hills, the remaining population in the Torghar Hills would not be in danger of extinction. The Torghar Hills population, under the management of the TCP, has been steadily increasing since the inception of the TCP in 1985. Poaching, the greatest cause of substantial markhor declines, has been virtually eliminated in the Torghar Hills. Given the level of the abundance within Torghar Hills as a result of management under the TCP, we find that this population would be large enough to persist in the face of threats associated with habitat destruction, disease, and inadequate regulatory mechanisms, despite the hypothetical loss of the range outside of Torghar Hills. In contrast, based on the information available, the populations outside of Torghar Hills are small and fragmented. We have no information to suggest that habitat for populations outside of Torghar Hills is optimal, and, instead, the information suggests that these populations likely exist on tribal

lands that are subject to overgrazing by domestic livestock, which is the dominant land use and the primary means of subsistence for local tribes. Therefore, the portion of the range outside of the Torghar Hills does not meet the definition of “significant” and does not warrant further consideration.

### **Available Conservation Measures**

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and encourages and results in conservation actions by Federal and State governments, private agencies and groups, and individuals.

Section 7(a) of the Act, as amended, and as implemented by regulations at 50 CFR part 402, requires Federal agencies to evaluate their actions within the United States or on the high seas with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. However, given that the straight-horned markhor is not native to the United States, we are not designating critical habitat for this species under section 4 of the Act.

Section 8(a) of the Act authorizes the provision of limited financial assistance for the development and management of programs that the Secretary of the Interior determines to be necessary or useful for the conservation of endangered and threatened

species in foreign countries. Sections 8(b) and 8(c) of the Act authorize the Secretary to encourage conservation programs for foreign endangered species and to provide assistance for such programs in the form of personnel and the training of personnel.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered and threatened wildlife. These prohibitions, at 50 CFR 17.21 and 17.31, in part, make it illegal for any person subject to the jurisdiction of the United States to “take” (take includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt any of these) within the United States or upon the high seas; import or export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any endangered or threatened wildlife species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken in violation of the Act. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered and threatened wildlife species under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22 for endangered species and 17.32 for threatened species. For endangered wildlife, a permit may be issued for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. For threatened species, a permit may be

issued for the same activities, as well as zoological exhibition, education, and special purposes consistent with the Act.

### **Special Rule**

Section 4(d) of the Act states that the Secretary may, by regulation, extend to threatened species prohibitions provided for endangered species under section 9 of the Act. Our implementing regulations for threatened wildlife (50 CFR 17.31) incorporate the section 9 prohibitions for endangered wildlife, except when a special rule is promulgated. For threatened species, section 4(d) of the Act gives the Secretary discretion to specify the prohibitions and any exceptions to those prohibitions that are appropriate for the species, and provisions that are necessary and advisable to provide for the conservation of the species. A special rule allows us to include provisions that are tailored to the specific conservation needs of the threatened species and which may be more or less restrictive than the general provisions at 50 CFR 17.31.

The Service recognizes that there is a reasonable argument for the proposition that controlled sport hunting (i.e., noncommercial) may provide economic incentives that contribute to the conservation of certain wildlife populations. These incentives may be direct, such as generating funding for essential conservation measures through licensing fees. They may also be indirect, such as focusing governmental attention on the need to protect species of economic value.

Well-managed conservation programs, including those that incorporate sport hunting, can significantly contribute to the conservation of wildlife, improve wildlife populations, and greatly enhance the livelihoods of the local people. The primary objective of a well-managed trophy-hunting program is not hunting, but the conservation of large mammals (Shackleton 2001, p. 7). The key lies in ensuring a sufficient number of mature males remain in the population to maintain normal reproduction rates. For species with polygynous mating systems, removing some of the males from a population does not necessarily affect the growth rate of the population. If a fraction of the mature males (approximately 2 percent) are removed, normal reproduction can be maintained and any long-term genetic impacts from removing “genetically superior” individuals from a population can be minimized (Shackleton 2001, p. 10).

Many hunters are willing to pay relatively large fees for the privilege to hunt. If the money is used to conserve the species that is the focus of the conservation program, the program may be sustainable. Additionally, habitat restoration may also be achieved. Incorporating the needs of the local people creates an incentive to conserve wildlife and ensures the success of the program (Shackleton 2001, pp. 7, 10).

In recognizing the potential of conservation programs, including those based on sport hunting, we are proposing a special rule to allow the import of sport-hunted markhor trophies taken from established conservation programs without a threatened species permit issued under 50 C.F.R. § 17.32, provided that certain criteria are met. Importation of a personal sport-hunted straight-horned markhor may be authorized by the



Director of the U.S. Fish and Wildlife Service (Director) without a threatened species permit if the trophy is taken from a conservation program that meets the following criteria: (1) Populations of straight-horned markhor within the conservation program's areas can be shown to be sufficiently large to sustain sport-hunting and the populations are stable or increasing; (2) regulating authorities have the capacity to obtain sound data on populations; (3) the conservation program can demonstrate a benefit to both the communities surrounding or within the area managed by the conservation program and the species, and the funds derived from sport hunting are applied toward benefits to the community and the species; (4) regulating authorities have the legal and practical capacity to provide for the long-term survival of the populations; (5) regulating authorities can determine that the trophies have in fact been legally taken from the populations under an established conservation program. The Director may, consistent with the purposes of the Act, authorize by publication of a notice in the **Federal Register** the importation of personal sport-hunted straight-horned markhor, taken legally from the established conservation program after the date of such notice, without a threatened species permit, provided that the applicable provisions of 50 CFR part 23 have been met.

As discussed above under Factors B and D, hunting of markhor is allowed through a Pakistani government exemption, and export of markhor in Pakistan is allowed only from community-managed conservation areas in accordance with CITES provisions. To encourage communities to conserve populations of markhor, the Conference of the Parties to CITES granted Pakistan an annual export quota of 12 markhor sport-hunted trophies taken through community-based programs. CITES Resolution Conf. 10.15 (Rev.

CoP 14) recommends that CITES Authorities in the State of import approve permits of sport-hunted markhor trophies from Pakistan if they meet the terms of the Resolution. This proposed special rule, if made final, would similarly facilitate support for these conservation programs. Therefore, we find this special rule would provide necessary and advisable conservation measures that are needed for this subspecies.

### **Peer Review**

In accordance with our policy, “Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities,” that was published on July 1, 1994 (59 FR 34270), we will seek the expert opinion of at least three appropriate independent specialists regarding this proposed rule. The purpose of such review is to ensure listing decisions are based on scientifically sound data, assumptions, and analysis. We will send copies of this proposed rule to the peer reviewers immediately following publication in the **Federal Register**. We will invite these peer reviewers to comment, during the public comment period, on the specific assumptions and the data that are the basis for our conclusions regarding the proposal to reclassify the straight-horned markhor as threatened under the Act and to promulgate the proposed special rule.

We will consider all comments and information we receive during the comment period on this proposed rule during preparation of a final rulemaking. Accordingly, our final decision may differ from this proposal.

## Required Determinations

### *Clarity of Rule*

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (a) Be logically organized;
- (b) Use the active voice to address readers directly;
- (c) Use clear language rather than jargon;
- (d) Be divided into short sections and sentences; and
- (e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the names of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

### *National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

We have determined that we do not need to prepare an environmental assessment, as defined under the authority of the National Environmental Policy Act of 1969, in connection with regulations adopted under section 4(a) of the Act. We

published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

#### *Paperwork Reduction Act*

This rule does not contain any new information collections or recordkeeping requirements for which Office of Management and Budget (OMB) approval is required under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). We may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

#### **References Cited**

A list of all references cited in this document is available at <http://www.regulations.gov> at Docket No. FWS-R9-ES-2011-0003, or upon request from the U.S. Fish and Wildlife Service, Endangered Species Program, Branch of Foreign Species (see **FOR FURTHER INFORMATION CONTACT**).

#### **Authors**

The primary authors of this proposed rule are staff members of the Branch of Foreign Species, Endangered Species Program, U.S. Fish and Wildlife Service.

## List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

## Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

### PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

**Authority:** 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.11(h) by revising the entry for “Markhor, straight-horned” in the List of Endangered and Threatened Wildlife to read as follows:

#### **§17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*



Species		Vertebrate					
		population where					
Common name	Scientific name	Historic range	endangered or threatened	Status	When listed	Critical habitat	Special rules
MAMMALS							
*	*	*	*	*	*	*	
Markhor, straight- horned	<i>Capra falconeri jerdoni</i>	Afghanistan, Pakistan	Entire	T	15,	NA	17.40(r)
*	*	*	*	*	*	*	

3. Amend § 17.40 by adding a new paragraph (r) to read as follows:

**§ 17.40 Special rules—mammals.**

\* \* \* \* \*

(r) Straight-horned Markhor (*Capra falconeri jerdoni*).

(1) *General requirements.* Except as noted in paragraph (r)(2) of this section, all prohibitions of §17.31 of this part and exemptions of §17.32 of this part apply to this subspecies.

(2) *What are the criteria under which a personal sport-hunted trophy may qualify for import without a permit under §17.32 of this part?* If, upon receiving information on an established conservation program for straight-horned markhor:

(i) Populations of straight-horned markhor within the conservation program's areas can be shown to be sufficiently large to sustain sport hunting and are stable or increasing;

(ii) Regulating authorities have the capacity to obtain sound data on populations;

(iii) The conservation program can demonstrate a benefit to both the communities surrounding or within the area managed by the conservation program and the species; and the funds derived from sport hunting are applied toward benefits to the community and the species;

(iv) Regulating authorities have the legal and practical capacity to provide for the long-term survival of the populations; and



(v) Regulating authorities can determine that the sport-hunted trophies have in fact been legally taken from the populations under an established conservation program, the Director may, consistent with the purposes of the Act, authorize by publication of a notice in the Federal Register the importation of personal sport-hunted straight-horned markhor, taken legally from the established program after the date of such notice, without a Threatened Species permit pursuant to §17.32 of this part, provided that the applicable provisions of 50 CFR part 23 have been met.

\* \* \* \* \*

Dated: \_\_\_\_ July 26, 2012\_\_\_\_\_

Thomas O. Melius

Acting Director, U.S. Fish and Wildlife Service

Billing Code 4310-55-P

~~Reclassifying the Straight-Horned Markhor (*Capra falconeri jerdoni*) with Special Rule~~

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